

## 15 DESCRIPTION OF THE INMARSAT-A TELEPHONE/FAX SYSTEM

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**BACKGROUND** Experience has demonstrated the importance of reliable communication links from remote site operations to home. In this document communication means a telephone/fax/modem connection for high-speed data transfer. We have been preparing for the "best" communication package for the Manus and other installations world-wide for the past two years. One year ago we attended a COMSAT symposium on Inmarsat technology. One main goal in attending was to decide which form of Inmarsat was best now.

There is considerable advertising out about some of the new Inmarsat services, especially Inmarsat-B, a digital link that holds promise of direct Internet connection.

The result we came away with was that today and for the next few years, Inmarsat-A is the right choice. A report was published as to our reasons. At that time we selected the best hardware for our needs and recommended to TWP to purchase this immediately.

In November, 1995 we attended the COMSAT conference and were able to see the progress for the past year. We returned with the same feelings - the same hardware was best and we should stick with Inmarsat-A.

We have been asked to move swiftly to procure a communication system for the Manus installation. Susan Turner is our procurement contact. This memo is a brief description of the system we are procuring.

The operations on Manus are not unlike operations on a ship at sea. The file transfer oriented system we describe below is one that is enjoying great success on research vessels. It provides maximum connectivity at minimum cost and greatest efficiency.

#### **HARDWARE RADIO:**

Mobile Telesystems Inc. (MTI)

Model TCS-Ultralite (9700) SHSD.

54/64 Kbps data transfer

two different phone numbers, one for fax, one for telephone.

remote, removable antenna.

cordless hand set allows field work away from radio.

weighs 42#. Portable and can be a carryon item.

will up-grade to Inmarsat-B as soon as that technology is ready.

#### **FAX/MODEM:**

Telebit world Blazer. One modem required at each end of the connection in order to achieve full data through-put.

#### **FILE TRANSFER SOFTWARE:**

BLAST. PC platform.

BLAST operates at each end of the connection. The operator at each end has control of both computers. If you are familiar with the popular program LAPLINK you will understand how BLAST works. Files are selected for transfer the "blasted" to the other computer. The transfer works in both directions. Files are compacted for transfer then un-compacted at the other end. Of course, a well conceived error checking scheme is used.

Economy was an important part of our thinking. BLAST provides maximum throughput at a minimum on-time cost. One feature is a sliding transmit window. Files are segmented into packets and sent sequentially. If transmission is interrupted, the transfer is not lost. When the connection is re-established, the transfer picks up where it left off.

#### **OPERATION NOTES:**

The system will act as a normal telephone and can be called using standard international telephone calls. Thus when not in use, it will act as a standard fax machine.

A user can make a modem call to any number, much the same as they would in the US. However, this is discouraged because of the extra expense. "Blasting" is a much more cost effective and reliable means of making digital connections.

The hand set is cordless. Thus a person can be out in the field working on equipment and talking to an expert in the states.

The antenna is removable. Thus the electronics will be in a dry place and only the antenna will be exposed.

**EMAIL** From the remote location, e-mail is collected into one directory on the user PC in the data van. On a regular basis, all e-mail messages are blasted to the communication center (BNL) where an operator will forward them on to their destinations.

E-mail messages to persons at the remote site will be forwarded to a central directory at the communications center. The messages will be bundled and blasted all at once to the remote site. An operator at the remote site will disseminate received e-mail.

**FAX MACHINE** We will have a standard fax machine connected to the radio-telephone. It will have its own separate telephone number and will operate independently to the telephone line.

**FINAL NOTES** Considerable thinking has gone into our design. If anyone is interested in copies of the several reports we have published on e-mail, please contact behrens@bnl.gov.